

## Method Madness

Use the **Nets** to complete each exploration.

### ➔ Exploration 1: Rectangular Prism

- Find the area of the shaded region using 2 different methods.

Method 1:

Method 2:



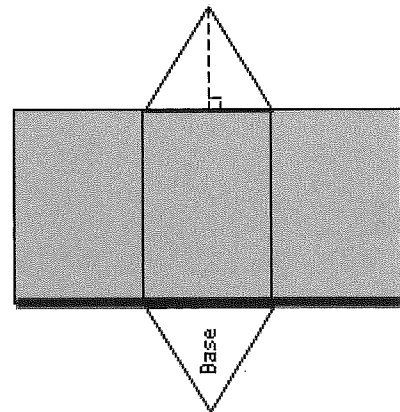
- Cut out the net and fold it to create a rectangular prism.
- What is the relationship of the bold line to the base?

### ➔ Exploration 2: Triangular Prism

- Find the area of the shaded region using 2 different methods.

Method 1:

Method 2:



- Cut out the net and fold it to create a triangular prism.
- What is the relationship of the bold line to the base?

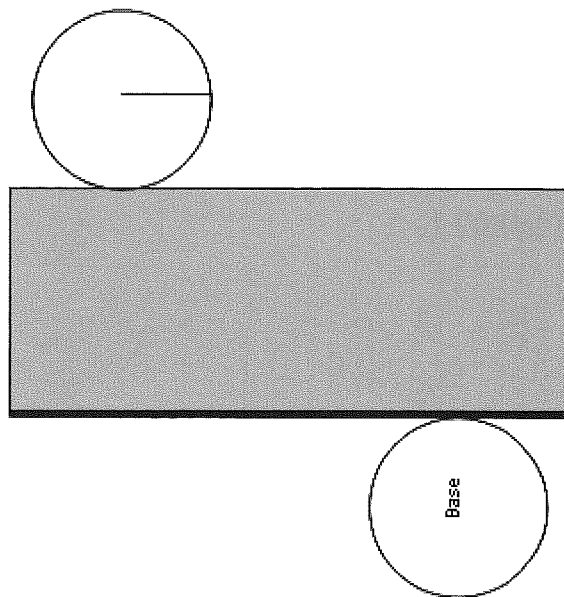


## Unit 8 Lesson 1

### Method Madness

#### ➡ Exploration 3: Cylinder

7 Find the area of the shaded region.



8 Cut out the net and fold it to create a cylinder.

9 What is the relationship of the bold line to the base?

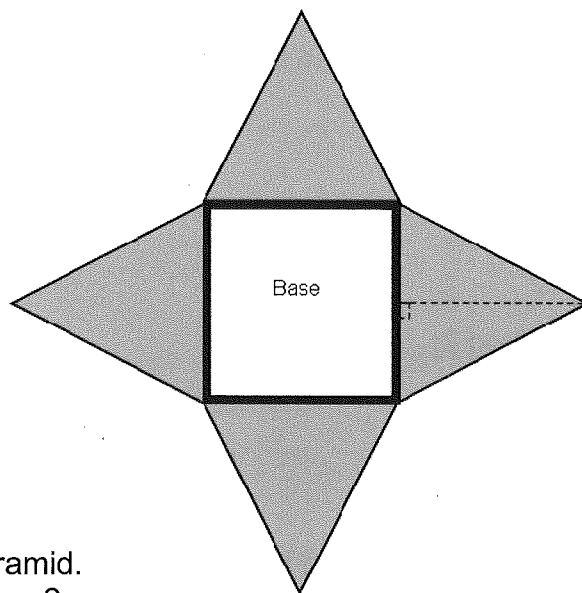
10 What is the length of the circumference?

#### ➡ Exploration 4: Square Pyramid

11 Find the area of the shaded region using 2 different methods.

Method 1:

Method 2:



12 Cut out the net and fold it to create a square pyramid.

13 What is the relationship of the bold line to the base?

### Formula Hunt – Total Surface Area

- Use the **Formula Cards** to complete the graphic organizer.
- Attach the cards in the appropriate spaces.

<i>Formula</i>	<i>Name</i>	<i>Name</i>
	<i>Picture</i>	<i>Picture</i>

- What is the formula for lateral surface area for this three-dimensional figure?
- How is the formula for total surface area similar to the formula for lateral surface area for this three-dimensional figure?
- How is the formula for total surface area different from the formula for lateral surface area for this three-dimensional figure?

<i>Formula</i>	<i>Name</i>	<i>Name</i>
	<i>Picture</i>	<i>Picture</i>

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## Unit 8 Lesson 1

### Formula Hunt – Total Surface Area

<i>Formula</i>	<i>Name</i>
	<i>Picture</i>

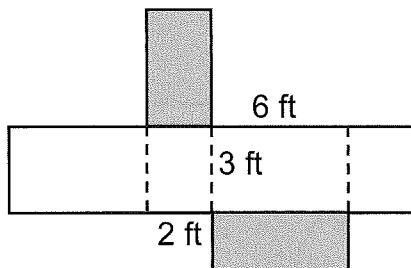
- What is the formula for lateral surface area for this three-dimensional figure?
- How is the formula for total surface area similar to the formula for lateral surface area for this three-dimensional figure?
- How is the formula for total surface area different from the formula for lateral surface area for this three-dimensional figure?



## Traveling Around

- Take your worksheet to any other student and choose a problem to work. You should agree to work the same problem on each other's paper.
- When each of you has finished, check your answer, sign your name in the shaded area under the problem, take your worksheet to another student, and repeat the process.
- Continue this procedure until all of your problems are worked. Each student may work only one problem on your worksheet.

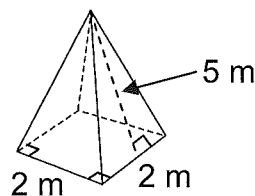
- 1** The net of a storage box is shown below.



If the lateral surface area of the net is unshaded, find the area of the unshaded region.

Signature

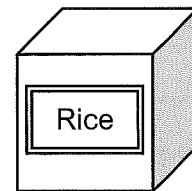
- 2** Kelly created a pyramid out of cardboard. A model of the pyramid is shown below.



What is the surface area of the pyramid?

Signature

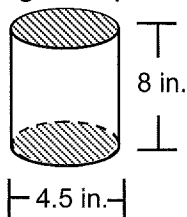
- 3** A small box of rice is shown.



If each side length is 5.5 inches, what is the surface area of the box?

Signature

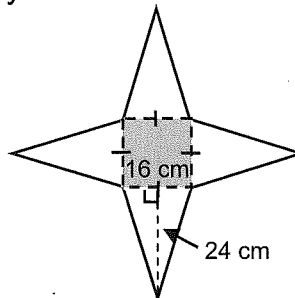
- 4** For a project Audrey covers the lateral surface of a large soup can.



What is the approximate lateral surface area of the soup can?

Signature

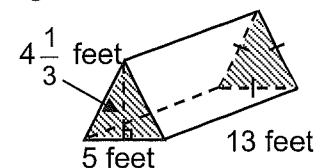
- 5** The net of a square pyramid is shown below.



What is the surface area of the pyramid?

Signature

- 6** The large crystal prism is used in science to study light refraction.



Light reflects only through the lateral faces of the prism. What is the surface area of the lateral faces of the crystal prism?

Signature

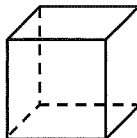
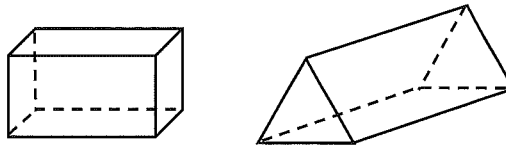
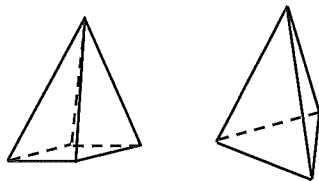
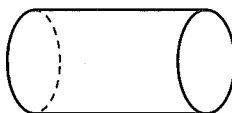


# Unit 8 Lesson 1

## Independent Practice

Surface area is the area of all surfaces of a three-dimensional figure. Lateral surface area is the surface area of the figure, excluding all bases.

### Surface Area

	Formula	Possible Three-dimensional Figure(s)
Cube (total)	$S = 6s^2$	
Prism (lateral)	$S = Ph$	
Prism (total)	$S = Ph + 2B$	
Pyramid (lateral)	$S = \frac{1}{2}P\ell$	
Pyramid (total)	$S = \frac{1}{2}P\ell + B$	
Cylinder (lateral)	$S = 2\pi rh$	
Cylinder (total)	$S = 2\pi rh + 2\pi r^2$ or $S = 2\pi r(h + r)$	

$P$  represents the Perimeter of the Base of a three-dimensional figure.

$B$  represents the Area of the Base of a three-dimensional figure.

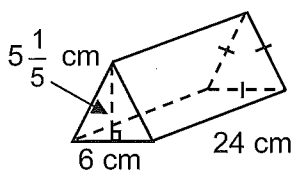
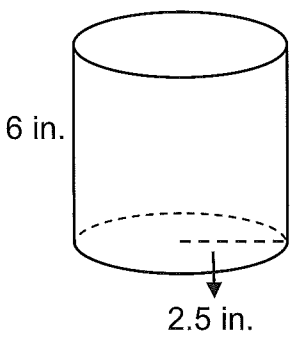
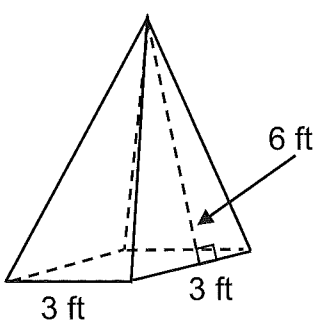
$h$  represents the height of the figure.

$s$  represents the side length of a cube.

$r$  represents the radius of a circle.

$\ell$  represents the slant height of a pyramid.

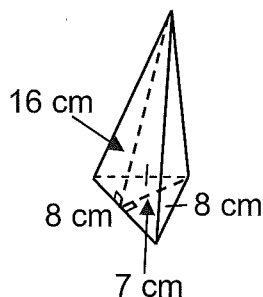
Complete the table.

	Figure	Lateral Surface Area	Total Surface Area
1		Formula:	Formula:
2		Formula:	Formula:
3		Formula:	Formula:



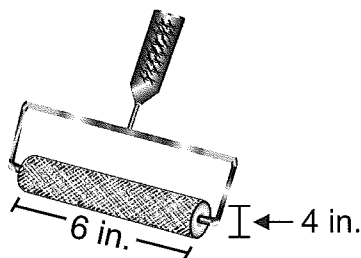
## Unit 8 Lesson 1

- 4 Lisa built a tail wing for her model airplane. The model is shown below.



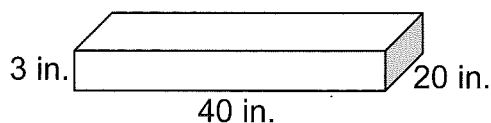
If Lisa covers the lateral surface of the tail wing with balsa wood, how much balsa wood will Lisa need?

- 5 Paul's art teacher uses a small roller to make ink impressions.



What is the area of the paper with which the surface of the small roller will come into contact in 2 complete rotations? Write your answer in terms of  $\pi$ .

- 6 A gift box is 40 inches long, 20 inches wide, and 3 inches high.



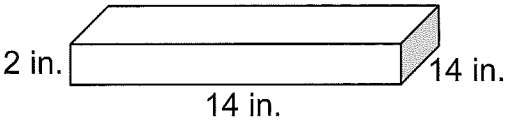
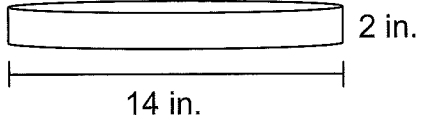
How much wrapping paper will be needed to cover the gift box without any overlap?





## Pizza Delivery

Pam's Pizza Shop is purchasing containers to use for pizza delivery. Pam's 2 options are shown below.

Option 1	Option 2
 <p style="text-align: center;">Price per square inch: \$0.001</p>	 <p style="text-align: center;">Price per square inch: \$0.0015</p>

Which container is the least expensive? Justify your answer.

### FOR TEACHER USE ONLY:

a. YES NO Student arrives at a correct solution?

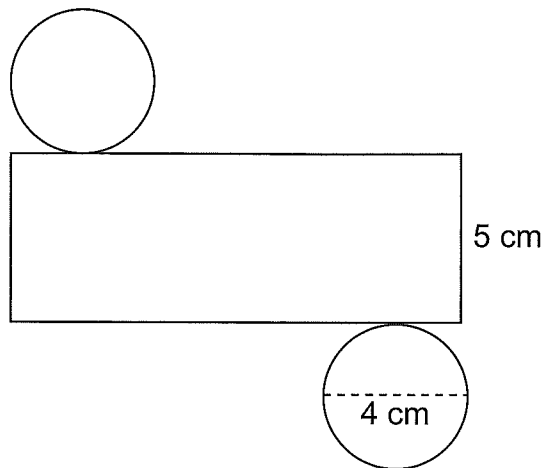
	4	3	2	1
b. Conceptual Knowledge				
c. Procedural Knowledge				
d. Communication				



## Unit 8 Lesson 1

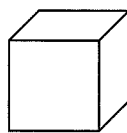
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- 1 What is the lateral surface area of the cylinder pictured?



- A  $20\pi \text{ cm}^2$
  - B  $28\pi \text{ cm}^2$
  - C  $40\pi \text{ cm}^2$
  - D  $80\pi \text{ cm}^2$
- 

- 2 A jeweler packages rings in small boxes like the one shown below.

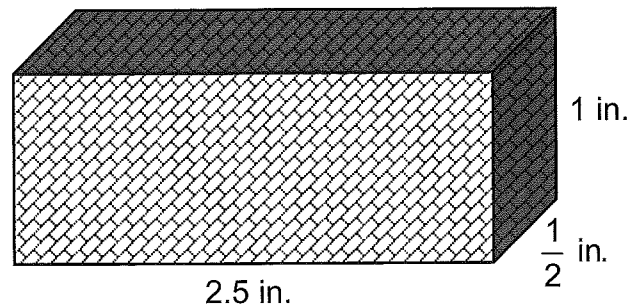


If each side length is 1.5 inches, what is the surface area of the box?

- A 2.25 square inches
- B 3.375 square inches
- C 9 square inches
- D 13.5 square inches



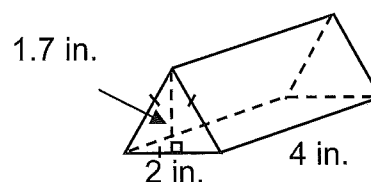
- 3 A child's building block is pictured below.



Which of the following represents the total surface area of the building block?

- A  $1.25 \text{ in.}^2$
- B  $6 \text{ in.}^2$
- C  $8.5 \text{ in.}^2$
- D  $12 \text{ in.}^2$

- 4 Chocolate candy is packaged in a container shaped like the one pictured below.



What is the surface area of the container?

- A  $30.8 \text{ in.}^2$
- B  $27.4 \text{ in.}^2$
- C  $20.4 \text{ in.}^2$
- D  $13.6 \text{ in.}^2$